

REMARKS

Claims 28-54 are pending. Claims 48-51 have been cosmetically amended.

It is noted that the Office Action Summary does not acknowledge receipt of the certified copy of the priority document, which should have been received from the International Bureau of WIPO. Clarification is respectfully requested.

The Action rejected claims 48-53 under 35 U.S.C. § 112, second paragraph, for indefiniteness arising out of perceived lacks of antecedent basis for "the step of resetting the analog VCO control voltage" in claim 48 and "the step of adjusting the analog VCO control voltage" in claim 49. Those rejections have been rendered moot by this Amendment, which has cosmetically revised claims 48 and 49 (and claims 50 and 51) such that it is even clearer that "resetting" and "adjusting" are further features of the method defined by claim 47. As further features, they do not need antecedent bases. Accordingly, it is respectfully submitted that claims 48-53 are reasonably definite to a person of ordinary skill in this art, which is all that is required by Section 112, second paragraph.

Claims 28-31, 34, 42, 43, 47, and 48 stand rejected under 35 U.S.C. § 103(a) for obviousness over a combination of U.S. Patent No. 6,806,786 to Lam et al. ("Lam") and U.S. Patent Application Publication No. US 2003/0050029 by Kaufmann et al. ("Kaufmann"). Various ones of the remaining claims stand rejected for obviousness over respective combinations of Lam and Kaufmann and U.S. Patent Application Publication No. US 2002/0089383 by Su et al. ("Su") or U.S. Patents No. 6,778,024 to Gupta et al. ("Gupta"), or No. 6,664,826 to Creed et al. ("Creed"), or No. 6,396,890 to Turner et al. ("Turner"). Those rejections should be reconsidered and withdrawn because none of the cited documents, either alone or in combination, supports a *prima facie* case of obviousness against any pending claim.

Pending claim 28, for example, calls for a multiband phase-locked loop (PLL) arrangement that includes, among other things, a control circuit that has a multi-window circuit having at least two amplitude windows, each amplitude window being defined by respective upper and lower voltage levels, and a comparison device for comparing a control voltage output from a loop filter with the upper and lower voltage levels of an amplitude window. If the control voltage settles within a first amplitude window, a

second narrower amplitude window is selected and the control voltage is compared with the upper and lower voltage levels of the second amplitude window. If the control voltage settles within the second amplitude window or a further subsequent even narrower amplitude window, phase lock is achieved. If the control voltage does not settle within an amplitude window, the comparison device provides a signal for providing a second control signal for switching to another frequency band, and for the other frequency band, the control voltage is compared with at least one of the amplitude windows to determine if phase lock is achieved in the other frequency band.

This two-window operation is advantageous because it helps ensure relatively fast locking and also helps ensure that the proper band is selected such that the control voltage initially is in the middle of its operating range. The latter ensures that locking is maintained despite variations in temperature and long-term drifts. If only a single, wide window is used, the control voltage can lock close to the end of its operating range, and so small temperature variations or drifts can cause the loop to lose lock. If only a single, narrow window is used, the loop might not lock at all or the settling time can be unacceptably long. It will be recognized, then, that simply finding a lock condition is not really enough. More useful is a lock that is stable over a longer term, thereby avoiding band-switching during operation, which causes a lock to be lost temporarily. In a communications application, losing lock results in bit errors in the communication channel, which are not acceptable. The subject matters defined by independent claims 28 and 47 avoid those problems.

Lam asserts that it describes a PLL with a self-selecting multiband voltage-controlled oscillator (VCO), but as admitted on page 5 of the Action, Lam does not disclose that a narrower window is selected after the control voltage has settled within an amplitude window. Thus, Lam says nothing about two-window operation as claimed.

Kaufmann asserts that it describes a fast-locking wide-band frequency synthesizer, and an entirely different idea from Lam and from the subject matters claimed. Kaufmann uses an open-loop architecture to acquire lock fast. Kaufmann recognizes the problem with such an architecture is that elaborate calibration is required and a look-up table (LUT) must be created and stored for each sample. For example, Kaufmann's Paragraph 0068 merely describes how all frequency settings are measured

and stored in its elaborate calibration (see Paragraph 0066). Such calibration is irrelevant to the two-window features as claimed.

Kaufmann concentrates on finding the correct band for acquiring frequency lock for a certain frequency range before closing the loop and thus before actually acquiring lock. See Kaufmann, e.g., Paragraphs 0061-62. Kaufmann's Paragraph 0072 discusses how to select a frequency band when two bands cover the same channel, which involves selecting one band if the control voltage is in the lower half of its range and the other band if the control voltage is in the upper half of its range. Kaufmann does not discuss control voltage windows at all but rather discusses frequency bands with upper and lower limits, which are quite different from what is claimed. Kaufmann's Paragraph 0072 clearly shows that Kaufmann says nothing about two-window operation or determining whether phase lock is achieved as claimed.

It should now be apparent that combining Lam and Kaufmann does not support a *prima facie* case at least because the two-window and other features and advantages of the pending claims are neither taught nor would have been suggested by that combination. Moreover, it is not apparent even today why an artisan would have been motivated to attempt to combine the drawbacks of Kaufmann (e.g., requirement for elaborate calibration) with Lam. Accordingly, the obviousness rejections based on the combination of Lam and Kaufmann should be reconsidered and withdrawn.

As for the other cited documents, Su describes a synthesizer with an efficient lock detect signal generator and an extended-range VCO, but is utterly silent on the two-window and other features claimed. Gupta describes a system for trimming (i.e., adjusting) a VCO, but again that has nothing to do with the features claimed. Creed describes a loop filter and amplifier, which again have nothing to do with the features claimed. And finally Turner describes a phase-corrected frequency synthesizer, but is similarly silent on the two-window and other features claimed.

Because none of Su, Gupta, Creed, and Turner remedies any of the deficiencies of Lam and Kaufmann that are discussed above, any combination of these documents also fails to support a *prima facie* case against any of the pending claims. Accordingly, the obviousness rejections based on such combinations should be reconsidered and withdrawn.

It is believed that this application is in condition for allowance, and a Notice of same is solicited. If the Examiner has any questions, the undersigned attorney may be telephoned at the number given below.

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